ENHANCEMENT OF THE SORTPION PROPERTIES OF FOAM RUBBER BY INCORPORATING A SUITABLE ADSORBENT

By

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DECLARATION

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university and to the best of my knowledge and belief if does not contain any material previously published ,written or orally communicated by another person except ,where due reference is made in the text.

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ABBREVIATIONS

TSC	Total solid content
MST	Mechanical stability time
AC	Activated carbon

ABSTRACT

Natural rubber latex is a colloidal dispersion of cis 1,4-polyisoprene in an aqueous medium. Chemicals are added to NR latex mainly as dispersions, emulsions and solutions at the compounding stage of latex to enhance the processing characteristics and to achieve the desired properties of the final product. The addition of various chemicals into latex as one of the above method should be able to maintain the colloidal stability of the latex. The colloidal stability of the latex compound is governed by the particle size, physical nature, viscosity, pH and the stability of the dispersions.

In this study an attempt was made to enhance the sorption properties of NR latex foam by introducing a suitable adsorbent into the latex compound. There was an early attempt on incorporation of activated carbon into the natural rubber latex foam .From this investigation it was found instead of activated carbon zeolite mineral can be used as an adsorbent with minimizing the problems compared to activated carbon incorporation. Stable dispersion of 36 % zeolite can be prepared by mixing the zeolite with dispersing agent and water .The mechanical agitation in ten minutes is sufficient to prepare the zeolite dispersion with satisfying the basic requirements of a stable dispersion. According to the chemical and mechanical stability studies on the latex compound ,it has revealed up to 8% (on dry weight) dosage of zeolite dispersion can be incorporated into latex compound without disturbing the fine, continuous cell structure of NR foam .The similar investigation was carried out with the activated carbon and compared with zeolite foam samples. Activated carbon dispersion prepared as 25 % stable dispersion and incorporated into NR foam up to 5% (on dry weight) dosage.

The results of the experiment reveals that NR latex foam with Zeolite has a significant sorption properties for .ammonia and carbon dioxide gases compared to foam with activated carbon whereas organic matter sorption is higher in foams with Activated carbon adsorbent. This sorption property of foams with zeolite can be used to generate a pleasant indoor environment by reducing odour and pollutant gases.